

**A CONFIGURABLE BI-DIRECTIONAL BUS FOR COMMUNICATING  
BETWEEN AUTONOMOUS UNITS**

**ABSTRACT OF THE DISCLOSURE**

Processing units (PUs) are coupled with a gated bi-directional bus structure that allows the PUs to be cascaded. Each PUn has communication logic and function logic. Each PUn is physically coupled to two other PUs, a PUp and a PUf. The communication logic receives Link Out data from a PUp and sends Link In data to a PUf. The communication logic has register bits for enabling and disabling the data transmission. The communication logic couples the Link Out data from a PUp to the function logic and couples Link In data to the PUp from the function logic in response to the register bits. The function logic receives output data from the PUn and Link In data from the communication logic and forms Link Out data which is coupled to the PUf. The function logic couples Link In data from the PUf to the PUn and to the communication logic.

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